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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/992,344	11/14/2001	David K. Anderson	FIS9-2001-0151-US1	7187

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INTERNATIONAL BUSINESS MACHINES CORPORATION
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BLDG. 300-482
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EXAMINER	
SEFER, AHMED N	

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/992,344	ANDERSON ET AL.	
	Examiner	Art Unit	
	A. Sefer	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-10,21,22,25 and 28-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-10,21,22,25 and 28-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. In view of the appeal brief filed on November 28, 2003, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. ***Claims 1-4, 6 and 7*** are rejected under 35 U.S.C. 102(b) as being anticipated by Nicolay (4,198,744). Nicolay teaches (Figures 5 and 9, column 3, lines 10 – column 4, line 63) an insulator layer 32 (col. 3, l. 11); and an inverse-U shaped fuse 46/50/52 (col. 4, lines 40-48)

extending through said insulating layer to an underlying wiring layer through contact aperture 34 (cf. column 3, lines 20-24), wherein a portion of said fuse is positioned external to said insulator 32 (see Figure 9; said portion being seen to protrude from the underlying structure including layer 32), with a gap 58 (column (column 4, lines 40-44) juxtaposed between said insulator and said portion of said fuse, and wherein said fuse comprises a continuous conductive element 46 (col. 3, l. 40-47). In conclusion, Nicolay anticipates claim 1.

About claims 2 and 3: both further limitations defined by these claims fail to further limit the fuse structure but only limit its method of making.

About claim 4: said fuse by Nicolay has a thickness within the claimed range, namely 200 Angstrom (column 3, lines 36-38).

About claim 6: said portion is perpendicular to and above said insulator layer (see Figure 9).

About claim 7: Nicolay discloses an interface wall wherein said interface wall further comprises a first side wall (on the side of layer 50), a second side wall (on the side of layer 52), and an inner wall (underneath portion 46), wherein said inner wall is disposed within said gap 46.

4. Claims 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Nicolay (4,198,744).

Nicolay teaches (Figures 5 and 9 and column 3, lines 10 – column 4, line 63) an insulator layer 32 (col. 3, l. 11); and an inverse-U shaped fuse 46/50/52 (col. 4, lines 40-48) extending through said insulating layer to an underlying wiring layer through contact aperture 34 (cf. column 3, lines 20-24), wherein a portion of said fuse is positioned external to said insulator 32

(see Figure 9; said portion being seen to protrude from the underlying structure including layer 32), wherein said portion of said fuse is perpendicular to and above said insulator layer (see Figure 9), wherein said fuse comprises a continuous conductive element 46 (col. 3, l. 40-47).

About claim 9: the further limitation defined by this claim fails to further limit the fuse structure but only limit its method of making.

About claim 10: Nicolay discloses an interface wall wherein said interface wall further comprises a first side wall (on the side of layer 50), a second side wall (on the side of layer 52), and an inner wall (underneath portion 46).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nicolay (4,198,744). As shown above, Nicolay anticipated claims 1 and 8. Nicolay does not specifically teach the further limitations of claims 21 and 22, however it would have been obvious to include said further limitations because said fuse structure by Nicolay is obviously intended for use including in situations not under absolute vacuum. In this regard please see the definition of the Field of the Invention, column 1, lines 7-10: integrated circuits are used in a wide variety of applications including terrestrial ones in which the ambient atmosphere comprises air. Motivation to allow air to surrounds the fuse portion claimed derives from the added thermal

cooling in the presence of air further improving the device by Nicolay by further lowering the thermal conductivity in its environment (see Nicolay, col. 4, lines 44-48).

7. Claims 25 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nicolay (4,198,744) in view of Prior Art as Admitted by Applicant). Nicolay teaches (Figures 5 and 9 and column 3, lines 10 – column 4, line 63):

an insulator layer 32 (col. 3, l. 11);

an inverse-U shaped fuse 46/50/52 (col. 4, lines 40-48) completely extending through said insulating layer 32 through contact aperture 34 (cf. col. 3, lines 20-24),

wherein said insulator layer forms an external surface (namely: its upper main surface; cf. Figure 9) and a portion 46 (cf. col. 3, l. 44-46) (also: portions 50 and 52; see Figure 9) of said fuse extends beyond said external surface, and wherein said fuse comprises a continuous element (namely: 46; cf. Figure 9).

Nicolay does not necessarily teach the further limitations that said fuse is part of an integrated circuit structure such that a wiring layer covered by said insulating layer and having wiring elements exists and said U-shaped fuse is connected to said wiring elements with said insulating layer forming an external surface of said integrated circuit. However, it would have been obvious to include said further limitation in view of the Prior Art as Admitted by Applicant in "Background of the Invention" (col. 1, lines 7-63, in particular lines 7-10) in which it is explained that it is the very purpose of the invented fuse by Nicolay to be used in an integrated circuit (col. 1, l. 7-10) while contact aperture 34 as disclosed clearly serves as contact of the wiring from said fuse to the remainder of the integrated circuit. Although only a portion of the integrated circuit is shown (Figure 9) it is evident that in the shown portion insulator layer must

inherently cover a layer of wiring, because of the location of contact aperture 34, and that said inverse U-shaped fuse is indeed connected to wiring elements of the integrated circuit in applications of the latter. Therefore, it is seen that the said further limitations only claim obvious application for the very purpose the said inverse U-shaped fuse by Nicolay was intended for. It would have been obvious to separate said wiring elements from external portion of said integrated circuit structure (as in claim 29), since that would improve device integrity.

As for claim 28, the combined references disclose a fuse forming a circuit with said wiring elements.

As for claim 30: the further limitation defined by this claim fails to further limit the fuse structure but only limit its method of making.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ANS
May 19, 2004

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
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